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**COLLEGE OF BUSINESS AND ECONOMICS  
SCHOOL OF COMMERCE POST GRADUATE PROGRAM**

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**EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN  
PRESCRIPTION BEHAVIOR MEDIATED BY THE BRAND  
IMAGE: IN THE CASE OF GOVERNMENT HOSPITALS**

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Research Submitted to the Department of Marketing Management in Partial  
Fulfillment of the Requirements for the Degree of Master of Art in Marketing  
Management

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**July, 2023**

**Addis Ababa Ethiopia**

## **DECLARATION**

I hereby declare that this thesis entitled “EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN PRESCRIPTION BEHAVIOR MEDIATED BY THE BRAND IMAGE: IN THE CASE OF GOVERNMENT HOSPITALS”, has been carried out by me under the guidance and supervision of Belaynesh Tefera (PhD).

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

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Date

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## **CERTIFICATE**

This is to certify that the thesis entitles “EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN PRESCRIPTION BEHAVIOR MEDIATED BY THE BRAND IMAGE: IN THE CASE OF GOVERNMENT HOSPITALS”, submitted to Addis Ababa University school of commerce for the award of the Degree Master of Marketing Management and is a record of bona fide research work carried out by Mr. Yonas Ayele, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Adviser Name	Date	Signature
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# **Addis Ababa University**

## **School of Graduate Studies**

### **Approval of Thesis after Defense**

As members of the board of examiners, we examined this thesis entitled ‘EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN PRESCRIPTION BEHAVIOR MEDIATED BY THE BRAND IMAGE: IN THE CASE OF GOVERNMENT HOSPITALS by Yonas Ayele. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of “Masters of Marketing Management”.

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## ***Abstract***

*The purpose of this study was to investigate the effects of promotional mix on physician prescription behavior mediated by brand image in the case of government specialized hospital in Addis Ababa. Based on research objectives and proposed hypotheses, quantitative research approach with explanatory research design adopted. Physician have been currently working at government specialized hospitals in Addis Ababa were taken as a study population. A sample of 207 physicians was selected using convenience sampling technique. Primary data from the targeted respondents were collected through self-administered questionnaires, and analyzed using SPSS version 20.0. Both descriptive and inferential statistics were used for analysis of demographic profiles of the respondents, promotional mix, and brand image and physician prescription behavior variables. The results of the findings revealed that all promotional mix elements, except publicity had positive and significant effect on physician prescription behavior. Amongst them, direct marketing had relatively the strongest positive and significant effect on prescription behavior of physician. Advertising and personal selling had also higher effects next to direct marketing. Sales promotion was found to be the least effective promotional mix tool. Moreover, brand image showed a mediating effect on the relationship between promotional mix and physician prescription behavior. It can be concluded that pharmaceutical promotions and brand image of a drug are good predictors of physician prescription behavior pattern.*

***Keywords:*** *Promotional mix, brand image, physician prescription behavior, government hospitals*

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## **LIST OF ACRONYMS**

<b>SPSS</b>	Statistical package for the social sciences
<b>CFA</b>	Confirmatory Factor Analysis
<b>MR</b>	Medical Representative
<b>USD</b>	United States Dollar

# CHAPTER ONE

## INTRODUCTION

This chapter focuses on a study's context, problem description, and research questions are all included. and we discuss the general and specific objectives of the investigation. We also focus the major significance and the study's horizons.

### 1.1. Background of the Study

In the competitive market the commercial climate today, marketing strategy has surfaced as a necessary tool for any company to stay in the market and outperform its rivals (Daniel, 2018). Similar to other businesses, the pharmaceutical industry has made marketing one of its driving engines (Lexchin, 1992). The fundamental goal of pharmaceutical marketing is to boost the company's profitability by satisfying customers' requirements and desires.

Unlikely, in pharmaceutical marketing, the target market is not the general public or patients. but rather the medical professionals who make choices on their behalf (Peters et al., 2009). Because doctors are the main target audience for pharmaceutical marketing, it is essential to use various marketing mix methods to influence their prescription behavior. Specifically, Promotion is one of the essential elements of the marketing mix strategy used by pharmaceutical companies to achieve their marketing objective.

It involves the act of informing, persuading, educating, reaching, acquiring, and retaining the client through the advertising, personal selling, public relations, direct marketing, and sales promotion make up the promotion mix (Kotler & Keller, 2012). Consequently, the primary goal of pharmaceutical promotion is to influence physicians' decisions about which brand of medication is best for a patient's treatment.

Brandings are essential for organization's success because it frequently serves to differentiate products on the market. A brand is regarded as the most practical and effective accessible strategy in the pharmaceutical sector (Vigolo and Cassia, 2015). This is verified by Datta and Dave's (2017) finding that brand image has a stronger effect on doctor prescription behavior in underdeveloped nations. Faisal et al. (2020) have offered a similar perspective, arguing that

a company's brand image contributes to the development of a good attitude toward the company, which in turn influences the physician's behavior.

In this regard, Betselot (2021) found that the mediating function of brand image between the promotional mix and doctor prescription behavior. Based on this we come up with pharmaceutical promotions and the brand image are a better indicators of physician prescription behavior patterns. Further, Woinhareg (2018) found that pharmaceutical promotions have a direct association with prescription habit and which affects the generic brands.

Due to the existence of numerous medication brands that hold a sizable market share Ethiopia's pharmaceutical industry is very competitive, especially for businesses dealing with prescription drugs. In light of this, the study's objective is to determine how brand image influences the link between promotional mix components and doctors' prescribed conduct in the context of Ethiopian government hospitals. Considering the importance of brand image, the findings of this research was assistance to pharmaceutical firms in determining top-notch advertising strategies to effectively determine physicians.

## **1.2. Statement of the Problem**

In Ethiopia, there are around 11 pharmaceutical industries engaged in the large-scale manufacturing of generic medicines. In 2016/17, the number of pharmaceutical importers and wholesalers was 384 and 489, respectively. Only 3,327 retail pharmacies and 4,476 drug stores make up Ethiopia's modest retail pharmacy sector. The Ethiopian annual local pharmaceutical market is growing steadily at an average of 15% per year and is estimated to reach USD 1.8 billion by 2025 as well as the need is potential to skyrocket to USD 3.6 billion by 2030.

This shows much more opportunity for future financial success and there are many different brands in the pharmaceutical industry. Parmata and Chetla, (2020) notified pharmaceutical Gaining a competitive edge is the only way for businesses to exist in a market where competitors are vying for prescribers. Since the business environment is competitive, they must design and put into practice better approaches to capture and hold a sizable share of the market.

In this regard, pharmaceutical companies spend a lot of resources on marketing to persuade physicians the virtues of their goods (Al-Haddad, 2014). Similarly, Colleen (2017) noted that pharmaceutical companies typically spend 15% to 25% of their overall expenditures to put their brands in doctors' eyes through promotional activities as they are the ultimate decision-makers on behalf of patients (Zaki N, 2014).

Different studies were conducted concerning pharmaceutical promotion and prescriber's behavior in Ethiopia. In this regard, Mulugeta and Achenif (2017) conducted a study on the impact of pharmaceutical promotion strategies on prescribing behavior of physicians a developing country experience: Case of Addis Ababa, Ethiopia. This study was conducted to explore the impact of pharmaceutical promotion strategies on prescribing behavior of physicians and determine the convinced promotional tools that are most effective in influencing the prescribing behavior.

Also, Kalkidan (2019) investigated the effect of sales promotion on prescribing behavior of prescribers in Tikur Anbessa Specialized Hospital. The purpose of the study was to assess factors that influence prescribing behavior of physicians in Tikur Anbessa specialized hospital. The study found that promotional factors have an effect on the physicians' prescription decision. Furthermore, Adam (2016) focused on the effect of prescription drug promotion on physician prescribing behavior practicing in Addis Ababa. The findings revealed that the different promotional techniques that pharmaceutical companies are using have an effect on the physicians' prescription decision

As far as the researcher is aware, only the investigation of Betselot (2021) was focused on the effects of promotional mix on physician prescription behavior which is mediated by the brand image in private hospitals. The study concluded that pharmaceutical promotions and brand image of a drug are good predictors of physician prescription behavior pattern.

Although various studies on pharmaceutical promotion and physician prescription behavior in Ethiopian hospitals have been conducted in the past, none of them have centered on effects of promotional mix on physician prescription behavior mediated by the brand image in the context of government hospitals. This is reflecting lack of relevant current empirical data on this subject. Thus, this study closes a gap in the body of knowledge regarding on the influence of the promotional mix on doctors' prescription decisions, mediated by the brand's reputation.

The pharmaceutical industry is a competitive market, and pharmaceutical companies are constantly looking for ways to increase their market share. One way they do this is by promoting their products to physicians. However, the outcome of promotion can vary depending on the target audience. In Ethiopia, the majority of pharmaceutical marketing efforts are directed at physicians. However, there is limited research on this area.

### **1.3. Research Questions**

The following fundamental research questions are the subject of this work.

- I. What is the effect of pharmaceutical promotional mix on physician prescription behavior?
- II. How is pharmaceutical promotional mix related to brand image?
- III. How is brand image related to physician prescription behavior?
- IV. What is the effect of Advertising, brand image, Personal Sales, Sales promotion relationship between and physician prescription behavior?

### **1.4. Objectives of the Study**

#### **1.4.1. General Objective**

The main objective of this study is to analyze the effects of promotional mix on physician prescription behavior mediated by the brand image in the case of government hospitals.

#### **1.4.2. Specific Objectives**

The following specific goals are part of the study;

- I. To identify direct effect of pharmaceutical promotional mix on physician prescription behavior.
- II. To analyze direct effect of pharmaceutical promotional mix on brand image.
- III. To analyze direct effect of brand image on physician prescription behavior.
- IV. To examine whether Advertising, brand image, Personal Sales, Sales promotion relationship between and physician prescription behavior

## 1.5. Definition of Terms

These main words are defined as follows: are provided to create clearer on the concepts being addressed:

**Promotion:** Promotion is a marketing tool that is employed as part of a plan to connect vendors and purchasers. (Kotler and Keller, 2012).

**Promotional mix:** is the specific blend of advertising, public relations, sales promotion, personal selling, and direct- marketing tools that the company uses to persuasively communicate customer value and build customer relations (Kotler, 2012).

**Prescription of brand medicines-** a practice of physicians/medical doctors by which they write the drug's brand name on their prescription paper. (Stoppler and Hecht, 2009).

**Physician:** known as a medical doctor or just a doctor, is a person who practices medicine or works to improve one's health., or restoring health. (WHO, 2008).

## 1.6. Significance of the study

This research provides appropriate details for the pharmaceutical industry to identify the effects of promotional mix on physician prescription behavior mediated by the brand image in the case of government hospitals. This study is helpful in raising awareness for prescribers, Regarding how pharmaceutical advertising may impact doctors, medical representatives and businesses decisions to prescribe certain drugs. This study also offers baseline information to help policymakers create relevant evidence-based strategies. Assessing how the brand reputation and the promotional mix affect doctors' prescription decisions is the goal of this study when referring government hospitals. The findings of this study will fill the gap on the literature. The findings will also be of interest to pharmaceutical companies that are looking to increase their market share in Ethiopia.

## 1.7. Scope of the Study

*Conceptually*, the examination of marketing communications' impact on doctors' prescription decisions as influenced by the brand image of the drugs they recommend is the main goal of this study. Thus, the study variables are promotional mix, as predictor; prescription behavior as dependent variable; and brand image of prescribed drugs as mediator variable.

*Methodologically*, the sampling frame was made up of on the physicians who are currently working in the selected specialized hospitals and have the privilege of prescribing. Additionally, the researcher was conducting a survey using a closed-ended questionnaire obtained from the physician. Additionally, because of cross-sectional nature of the study, data was conducted at a time, and samples was chosen using convenience sampling technique

*Geographically*, researcher was considering the doctors alone working in the certain specialized hospitals in city. The study was specifically focus on St. Paul's Hospital Millennium Medical College, Amanuel Mental Specialized Hospital, and Alert Comprehensive Specialized Hospital. However, due to time and budget constraints, physicians working for various public and private hospitals in the nation's capital and in regional areas was excluded.

## **1.8. Organization of the Research Report**

The five main chapters of this study are as follows. The opening section contains background of the study, statement of the problem, research questions, objectives of the study, hypothesis, definition of terms, significance of the study, and scope of the study. The second chapter covers both theoretical review and, empirical review including conceptual framework of the study. Chapter three describes the research methodology. Thereafter, in the chapter four the results findings were analyzed, interpreted and discussed. Finally, summary of major findings, conclusions, recommendations was exhibited in the chapter five.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

The review identifies a summary of the research-related publications study problem and review about promotion, promotional mix, pharmaceutical promotion, brand image, and physician prescription behaviors. It also incorporates empirical studies and a conceptual framework for the research study.

#### **2.1. Theoretical Literature**

##### **2.1.1. Theories of Prescribing Decision**

The most influential models of physician prescribing behavior are elaborated on in this section as a theoretical background for the proposed conceptual framework.

###### **2.1.1.1. Raisch's Model**

Raisch proposed very complex model<sup>7</sup> that incorporates several direct and indirect factors influencing prescribing decisions. The direct factors include formularies, prescribing restrictions and required consultations, while the Indirect factors comprise promotions of pharmaceutical firms and visits by medical representatives (MRs), opinions of colleagues, the scientific data derived from randomized and controlled clinical trials as well as medical training. The demographics variables of physician and practice factors such as case mix and organizational structure were also included. Factors such as individual and practice are thought to affect prescribing decisions by influencing the thought process of the physician. The patient factors that influence the physician prescribing decision such as patient's presenting symptoms and doctor's diagnosis were considered in addition to psychosocial factors (Raisch, 1990).

###### **2.1.1.2. Gallan's Model**

Gallan developed a general theoretical model based on the review of related literature and empirical examination in an outpatient setting. The model incorporated three main components: predecessors, the process of interpreting the perceived need for a medication therapy into the prescription decision of physician, and outcomes. The predecessors include marketing efforts of pharmaceutical firms, economic and government factors and other variables that affect the drug prescribing decision of physicians (Hemminki, 1975).

#### **2.1.1.3. Singh's model**

Singh developed a conceptual model of the dyadic relation between MRs and physician prescribing. The model encompassed three dimensions such as network interconnection aspects, the possibility of transfer of resources (RT), activity integration and circulated actor relationship as predictors of physician prescribing behaviour. RT such as product knowledge gained by the detailing/MRs activities is associated with high prescription behaviour. The relationship between product knowledge and prescribing behaviour is stronger when the interaction between MRs and physicians is strong. Similarly, the higher density of promotional efforts like continuing medical education provided by MRs to doctors and the launch of new drugs are associated with the high prescription rate of physicians (Singh, 2008).

#### **2.1.1.4. Kyle, Nissen, Tett's Model**

Kyle et al. made efforts through literature review to develop a qualitative prescribing model that assesses the influence of economic factors on physician prescribing behavior. The model displays an array of direct and indirect commercial impacts on physician prescribing decision. For example, physicians are directly influenced by visits of MRs, sampling, gifts and conference travel. Although these tools have an indirect influence on GPs, it does not appear to be related to pharmaceutical promotion designs (Kyle et al., 2008).

#### **2.1.1.5. Godin et al.'s model**

Recently, Godin<sup>8</sup> developed a single model based on the planned behaviour theory to provide a possible framework for studying behaviors and intentions of health care professionals. The TPB was shown to be a suitable theory to explain the prescribing behaviour of physicians. Habit (past behaviour), which is distinct from physician characteristics, has a strong impact on physician prescribing. The authors also reported that non-psychological factors influence choice behaviour (Godin et al., 2008).

#### **2.1.1.6. Stros and Lee's model**

Stros and Lee conducted a review of marketing dimensions in the prescription industry to develop a conceptual pharmaceutical marketing model. The review provides insight into marketing factors which are based on marketing mix strategy (4Ps), specifically, product, price, place, and promotion that influence physician prescribing. The results concluded that the policy of promotion such as MRs, advertising, drug sampling, and information) is the most

relevant followed by price policy, and then product policy includes branding, product attributes (concerning side effects, risks, safety, efficacy and indication), drug delivery and packaging. The policy of distribution is the least important factor in the pharmaceutical context. Nonetheless, the effect of variables related to the 4Ps marketing mix concept on physician prescription behaviour needs further investigations (Stros and Lee, 2014).

### **2.1.2. Theories Relevant to Factors Influencing Prescribing Decision**

This section elaborates on relevant literature related to marketing, social, behavioral and consumer theories. These theories may aid the specification of how drug information sources are processed when decisions to prescribe drugs are made.

#### **2.1.2.1. Agency theory**

The theory presents a framework for analyzing relationships between interdependent to identify the problem that exists between parties and mechanism to solve it (Eisenhardt, 1989). The agency relationship occurs when the first party (the principal) relies on the second party (the agent) to perform certain actions on behalf of the client (Mott et al.,1998)

Within the context of this review, the focus is really on two critical agency relationships, that of the physician (agent) and patient (principal), and the pharmaceutical firm (principal) and physician (agent). In the first relationship, the pharmaceutical firms as principal obviously depend on the doctor as the agent to select the drugs they are offered in the market. The patient, in their role as principal, depends on the physician, acting as the agent, to select the appropriate drug. Physicians make decisions of prescribing drugs on behalf of their patients. The principal might be concerned that the agent may not take actions that are in the best interest of the principal. Although these may be the two primary relationships considered in this research, it should be noted that interventions of pharmacists may also influence the physician prescribing of drugs, however this maybe a second agency relationship (Eisenhardt, 1989).

Based on the above approach with respect to the pharmaceutical firm, the pharmaceutical firm (principal) is (1) motivated to sell its products (adapting various marketing efforts) and generate a profit, (2) while full disclosure is required, the firm typically emphasizes only a limited amount of the available information related to both the sale of that product to the physician and its safe use, (3) it believes in its products (drugs), and being at arm's length

from the patient: physician relationship, is assuming less risk and (4) its success is often influenced by environmental factors over which it may have little control (within the context of this research i.e. habit persistence and drug cost/benefit ratio).

On the physician-patient relationship, where the patient is the principal. Patients, in fact, rely on the doctor to diagnose and then prescribe the right medicine. This dependence originates from the technical skills and specialized knowledge required to make prescribing decisions. The patient (1) is, of course, interested in the most efficient, practical, least invasive moreover, cost effective treatment, (2) may know something about their condition, but does not understand the effectiveness or other properties of the prescription alternatives, and have little insight into the physician's the rationale for the selection of one product over another, (3) is the individual to whom an intervention is being prescribed, and, all things being equal, is less inclined to take unnecessary risks, unless it is the only alternative, and finally (4) the physician's prescription is a function of many variables over which the patient has little control (within this research, e.g., drug characteristics, drug cost/benefit ratio, habit persistence). (Epstein AJ, 2014; Groves K., 2006 and Schommer JC, 2005)

In this case, the effects of the agency may in part caused by the influence of the standard social pressures moreover, thus the impact on prescription. For instance, prescribers may perceive the patient's expectations and requests for a drug as a social pressure to write the drug. Doctors said that the inability to prescribe medication that the patient wants might hurt the patient - doctor relationship and reduces the possibility of a therapeutic functional cooperation. In other words, when the physician meets the patient's wishes for a particular drug through the provision of a prescription, the patient's confidence that the prescription is the right response is enhanced (Knight, 2006)

#### **2.1.2.2. Theory of Persuasion**

Persuasion involves both emotional and cognitive responses and is an interaction between cognition and emotion that can change an individual's behavior towards a specific objective. There are four key dimensions of persuasion: the sender of information, the receiver, the exchange between them, and the modification in behavior. The persuasion theory suggests that individuals' behavior willingly changes when they are exposed to a particular stimulus, and the mind alters the interaction. In the context of prescription literature, persuasion theory

is used to improve interventions that enhance the prescribing behavior of physicians, such as marketing activities (Schommer, 2005 and O'keefe 2002).

The Elaboration Likelihood Model (ELM) is a widely used model in persuasion theory. It proposes that individuals use both cognitive abilities and emotional reactions to interpret information and make decisions. The model suggests that the source and manner of information presentation, as well as the characteristics of the receiver, can influence the understanding of information and subsequently impact behavior. The ELM consists of two methods of persuasion: the focal method, which involves high cognitive effort, and the peripheral method, which involves a lower level. When individuals are less interested in an issue, they pay less attention to the information and are less motivated to engage in cognitive processing (Petty and Cacioppo, 1986).

In the context of pharmaceutical marketing, the effectiveness of marketing efforts by medical representatives in persuading physicians and changing their prescribing behavior can be studied. Factors such as environmental stimuli, personal relationships, marketing stimuli, physician characteristics, and drug characteristics emotionally impact physicians' decision-making during prescribing. Overall, persuasion theory and the ELM provide valuable insights into understanding and addressing pharmaceutical marketing issues and enhancing physician prescribing behaviors (Petty and Cacioppo, 1986)

### **2.1.2.3. The Buyer Behavior – Stimulus-Response Theory**

The stimulus-response (S-R) model of buyer behavior suggests that external stimuli influence a buyer's decision-making process, resulting in a specific response or purchase behavior. This model is similar to the Elaboration Likelihood Model (ELM) in terms of the importance of emotions and awareness in convincing individuals. According to the S-R model, the buyer's consciousness progresses from external stimuli to the purchase decision. Just like any consumer, a doctor (in this case) faces various influences when making a purchasing decision (Xing and Othman, 2015)

The model proposes that by adjusting the stimuli appropriately for a specific target population, the vendor can predict the response or purchase behavior. The S-R model considers the buyer as a "black box" where various stimuli, including marketing mix factors, enter and generate observable responses. On the other hand, the vendor aims to understand how stimuli are

translated into responses within the black box of the buyer. This understanding involves considering the buyer's characteristics (such as social and psychological factors) that affect how stimuli are perceived and interpreted, as well as the buyer's decision-making process, which ultimately determines the purchase behavior (Kotler, 2003 & 2005)

#### **2.1.2.4. Theory of Planned Behaviour**

The Theory of Planned Behavior (TPB) is a widely considered behavioral theory that can help understand and influence physician prescribing behavior. In the context of healthcare, TPB has demonstrated high predictive ability in understanding physicians' behavior. This theory focuses on three key elements: attitude, personal norm, and perceived behavioral control. Attitude refers to a physician's favorable or unfavorable view of marketing efforts and how it influences their prescribing behavior. It can be measured by evaluating factors such as drug information, brand, sales promotion, and effectiveness of medical representatives (Kramer et al., 2014; Perkins et al., 2007 and Ponnet et al., 2014)

The second element, subjective norms, involves the social influence and pressure that physicians feel to perform according to certain groups. This can include patient demands for specific drugs, patient expectations, pharmacist influence, and pharmacist-physician collaboration. Lastly, perceived behavioral control reflects a physician's perception of how easy or difficult it is to perform a specific behavior, taking into account their experience and anticipation of future challenges. This perception is influenced by contextual factors such as drug characteristics, the cost/benefit ratio, habit persistence, and trustworthiness of physicians in pharmacists. By considering these contextual variables as moderators, it is possible to further understand the relationship between marketing efforts, patient characteristics, pharmacist factors, and the prescribing decisions of physicians (Ajzen, 1991).

#### **2.1.3. Concept and Definition of Promotion**

Promotion is a significant actor in the marketing mix and it has impact on market outcome. The procedure is what it is of developing communication, relationships among a marketer and its customers. Additionally, the promotion serves to raise knowledge of the institution's services and improve public perception of it. (Kotler & Keller, 2012)

According to Amin and Bashir (2014) One of the key strategies for encouraging customers to make purchases is promotion. Promotion as human activities based on a communication process that can be directed via personal selling points or indirectly via advertising messages through the media (Kotler & Armstrong 2012).

Pharmaceutical marketing differs from other sectors the direct customers are not end users. It is the physicians or prescribers who decides the supply for the target markets of the pharmaceutical industries. In light of this, the marketing plans are primarily intended for doctors, not for patients. Pharmaceutical marketing is the business of promoting the sale of medications or drugs through advertising or other means (U.S. Department of Health and Human Services, 2006).

#### **2.1.4. Features of Pharmaceutical Promotion**

According to Smith (1991)The primary objective of pharmaceutical marketing is pharmaceutical care, which mandates safe and responsible drug consumption for customers and patients. This include finding cures for illnesses and diseases in an effort to raise public awareness of health issues and the general people's health. Additionally, marketing strategies work to increase manufacturers' and distributors' earnings and sales. (Sheehan, 2007).

Information exchange and tailoring a company's marketing strategy as closely as feasible to the demands of its clients/patients are two other important marketing objectives (Smith, 1991). The pharmaceutical sector is dealing with a challenging circumstance where the client is not the customer. Since doctors write the prescriptions that people are supposed to use, they are the main participants in pharmaceutical marketing. Due to this, Pharmaceutical companies are aware that using a variety of promotional tactics can help doctors change their prescribing habits, such as sales promotion, public relations, direct marketing, personal selling, and advertising (Al-Haddad et al.,2014).

##### **2.1.4.1. Advertising**

Advertising's basic objective is to elicit an emotional and behavioral response from the target client (Hamlett, 2017). Advertising is a method of interacting with a product's consumers and promoting concepts, products, or services through print media on behalf of a designated

sponsor. Advertising is a type of promotional mix.. The main distinction is that it uses mass media to communicate with many people without being personal (Kotler and Keller, 2016).

Advertising plays an awareness creation role as perceived by a customer to take an eventual choice of buying. Advertising was the common and the complete promotional tool to communicate the customer (Amin and Bashir, 2014).

#### **2.1.4.2. Personal Selling**

When a salesperson meets with a potential customer to close a deal, this is known as personal selling. In contrast to the majority of other promotional mix types, As scholar (Sagar, 2012).due to the fact that the message is delivered directly from the marketer to each individual member of the target audience, there is room for interaction and the chance to modify the core message to address particular target audience problems.

In order to make sales, personal selling involves making presentations to potential clients. Only a dialogue with a goal is being held. Representatives can introduce the product or service to the consumer via personal direct selling; By demonstrating the value of the service, they can persuade the client. One important result is that it enables quick input from customers to the company. Personal selling is a two-way conversation, whereas most other forms of communication are one-way ((Kotler & Keller, 2016).

#### **2.1.2.3 Publicity/Public Relations**

Public relations and publicity are meant to advance and safeguard a business's reputation or a specific product. Non-personal communications, such as press releases, media conferences, interviews, feature pieces, newsletters, photos, videos, and audiotapes, are referred to as publicity (Keller, 2008). The primary goal is to build solid relationships between sport organizations and its stakeholders (Serbanica & Constantinescu, 2016).

Public relations and publicity relate to a variety of programs and is designed to promote and protect a company's image or its individual product. Public Relations is a proactive and reactive management function used to evaluate public attitudes, identify the policies and procedures of an individual or organization with the intention of executing a program of action to earn public understanding and acceptance (Johnston, 2009). It is an essential part of the

marketing communication and has high importance in bigger organizations than small companies (Kotler & Keller, 2016).

In the marketing of pharmaceuticals, public relation features a variety of program layouts to promote the brands. It has to do with a thing. launching, panel discussions, seminars, and different related presentations sponsoring physician for conferences etc. It provides a dual benefit for both sectors and stakeholders.

#### **2.1.2.4 Sales Promotion**

Sales promotion is one of the aspects of the promotional mix, It is typically referred to as marketing initiatives that can boost sales immediately by offering extra benefits or incentives to the sales team, distributors, or the final consumer (Keller, 2008). Scholars like Zikiene & Kalmakhelidze (2016) proposed that sales promotion is price control, and academics claim that comprehending the magnitude of financial advantages in product purchases depends on how price promotion is employed, as well as how discounts and coupons are used. sales promotions are short-term marketing strategies used exclusively to increase sales and revenues in sports organizations.

They could come in the shape of handouts of T-shirts, vouchers for discounts, incentives for businesses, or contests. One of the most popular types of promotional mixes, they provide consumers with a perk in order to increase sales and purchases of specific sports goods and services as well as to inform target customers about new goods and services, rekindle interest in products among customers who have lost interest, or foster brand loyalty.(Zikiene & Kalmakhelidze, 2016).

Sales promotion includes consumer promotions (like samples, discounts, and prizes), trade promotions (like advertising and display allowances), company and sales force promotions, as well as a range of other short-term incentives to encourage the trial or purchase of a good or service. Kotler and Keller, 2016).

#### **2.1.2.5 Direct Marketing**

In order to elicit a response or a transaction, firms engage in direct communication with target customers through direct marketing, according to Belch & Belch (2003). According to Kotler

and Armstrong (2012), Direct marketing is described as making personal contacts with selected clients in order to gain a quick reaction and establish lasting client relationships.

Direct marketing differs from advertising in that it goes out directly to the target market. According to Tarasi (2013), direct mailing, catalogues, inserts, coupons, online marketing, and telemarketing are the distinct parts of promotional materials utilized in direct marketing. Sending brand-related information via mail, phone, or email is a part of pharmaceutical marketing, interactive media, and internet marketing or other.

### **2.1.3 Physician Prescription Behavior**

According to Sharifnia et al. (2018), the choice to write a prescription is a complex issue in the medical field. Understanding the underlying behavior of how doctors prescribe pharmaceuticals is crucial given the expanding population of people seeking prescriptions from their doctors (Nair et al., 2010; Kenneth, Lakhawat, and Chandra, 2016).

In a survey study to understand the variables influencing physician prescription habits, Sharifinia et al. (2018) proposed a number of factors, including physician experience and personality traits, healthcare facilities, client demands or desires, drug potency, and the type of illnesses. The assessment of the degree to which conduct is wholly voluntary and hence entirely under the physician's control is of particular relevance, according to these authors. Taneja Girish (2008) came to the conclusion that private sector doctors gave more weight to sponsorships, personal selling, and educational promotional materials, whereas higher qualified doctors gave more weight to scientific promotional tools.

### **2.1.4 Pharmaceutical Promotions and Physician Prescription Behavior**

Pharmaceutical marketing is distinctive in that doctors the intermediary customer rather than patients are the ones who decide whether to purchase the medication. Despite the fact that doctors couldn't agree on how advertising affected the way they prescribed, (Burashnikova et al., 2008), These data demonstrate that drug promotion has a positive impact on doctors' prescribing behavior (Vancelik et al., 2007). MRs employ a range of promotional strategies, such as gifts, medication samples, sponsorship, and journal advertising, to influence doctors' prescribing behavior favorably and improve prescription rates (Schramm et al., 2007, Majumdar et al., 2003).

Pharmaceutical marketing significantly and favorably influences physician prescribing behavior. Medical professionals become more aware of new medications and their peculiarities thanks to marketing campaigns (Carter, 2001). Doctors' prescribing habits are more significantly impacted by the pharmaceutical industry's promotional materials. For the physicians' comparison with consultants, these are more persuasive marketing strategies than scientific ones (Boltri, 2002).

According to a study by Morgan (2006), free samples have made doctors more likely to prescribe drugs even when they are not their first choice (Warrier, 2010). These free samples also influence doctors' attitudes and attitudes are considered to be most appropriate and least unethical in the study. Pens, notepads, pharmaceutical company-sponsored meals, sponsorships, and many other activities doctors participate in are examples of small presents.

According to research done in Bangladesh (Mir Monir Hossain et al., 2013), a doctor's prescription practice is influenced by the sales personnel's activity, personal relationships, product quality, and firm reputation. Studies showing the influence of marketing on the impact of prescription pharmaceuticals were undertaken to demonstrate this. The results showed that the promotion of competitive drugs negatively affects physicians' prescription behavior and has a negative effect on less promoted products (Pedan and Wu, 2011).

Researchers found that the most often cited factors influencing prescribing decisions were the physician's personal characteristics, cost of medication, and pharmaceutical industry' marketing and promotion methods (Majid, 2018). Consulting firms and medical professionals also relied heavily on commercial sources of information, particularly pharmaceutical reps.

Publicity is employed to boost other marketing initiatives, promote a long-term strategic brand, and establish credibility. It is a deliberate component of the larger advertising mix that works in unison with the others. The effect of various pharmaceutical marketing tactics on doctors' prescriptions of medications is assessed by Khajuria (2013). The findings showed that publicity such as seminars, journals, and business reputation as well as advertising such as brochures and booklets—were among the elements that physicians gave the most thought to.

### **2.1.5 Concept and Importance of Brand Image**

The foundation of any service or good is its brand image. Brand image might be anticipated to play a significant influence in the commercial market, particularly in circumstances where it is challenging to distinguish between genuine, quality-based goods and services (Shankar, Azar, and Fuller, 2008). Most marketers feel that the brand image, namely the physical impression of the goods, is the foundation on which the customer evaluates the quality of the product or service.

Customers associate brands with trust and familiarity because they interact with them frequently in daily life. Additionally, brands are seen as causal indicators of factors that influence whether a product's fundamental qualities and production procedures are what ultimately determine quality (Aaker, 1991). Customers frequently draw conclusions about the quality of the goods or services in these situations based on brand image, which then affects consumer behavior (Salinas and Pérez, 2009).

As a result, buyers are more likely to recognize the quality of the product or service through the brand's image. Through the promotion of value, image, prestige, or lifestyle, businesses create brands in an effort to draw in and maintain customers. By capitalizing on human nature, branding is a strategy for creating a long-lasting competitive advantage.

Because of the total impact it has on a firm, branding is essential. Branding has the power to influence how consumers view an organization's image, bring in new business, and raise brand awareness. Given that it serves as the company's primary representation, the logo is the most crucial component of branding, particularly in this area. Because of this, a professional logo design needs to be strong and simple to remember, leaving an impact on the viewer at first glance. This message can be conveyed with printed promotional materials. Elizabeth (2015).

Even while there are several ways that customers can manage these risks, one strategy is to only purchase well-known brands, particularly those that they have had positive prior experiences with. Additionally, brands deliver several advantages for a business. Brands are huge intangible assets that have a big impact on how well a company performs. A company may attract the most clients possible and build profitable, long-lasting relationships with them if brand management is done well.

### **2.1.6 Promotional Mix and Brand Image**

The general perception and sentiment of consumers toward a brand, which can be developed by various marketing techniques including promotion, is referred to as brand image, which is a crucial component of brand equity. Consumer-recognized brand identities can aid businesses in launching new brands and boosting sales of already-established ones. In this respect, word-of-mouth and integrated marketing communications have a significant impact on brand image (Saura, 2012). Promoting a business starts with raising awareness and enhancing its position or reputation. The end goal of advertising is to increase sales because buyers have been known to place straight orders from advertisements in some cases. Brand positioning and image-building are made possible through promotion. Famous brands are associated with excellent quality in the eyes of consumers (Rubio, 2014).

Marketers must discuss how other consumers have interacted with brands. For instance, customer contentment with a brand and how it offers comfort and delight to consumers should be discussed. According to research done in Pakistan, the new drug, promotional materials, and drug samples all have a big impact on how often doctors will prescribe a certain brand of medication (Ahmed, 2015). Due to the fact that branded products are typically more expensive than local alternatives, doctors' prescription behavior is less influenced by brand recommendations, but medication manufacturers can still enhance their goods' brand recognition through marketing.

Ibrahim (2015) reported that a survey of 110 doctors revealed that 56.6% of those polled agreed or strongly agreed that the frequency of sales representatives' visits to doctors' offices influenced their choice of drug brands. According to a study by Hossain (2013) that looked into the prescription habits of doctors in Bangladesh, nearly two thirds of practitioners (66%) preferred to write prescriptions for brand-name medications due to the aggressive marketing by pharmaceutical companies today.

Leo and Kangis (2000) investigated and showed how physicians make decisions regarding their prescription patterns for various brands of medications. These authors claim that the evaluation of how much pharmaceutical promotion is wholly voluntary and, hence, completely under the physician's authority to select a brand, is of particular interest. Non-

financial promotions, according to Montaner and Pina (2008), alter the product's anticipated normal price and boost the advertised brand's reputation.

### **2.1.7 The Mediating Role of Brand Image**

Faisal et al. (2020) have offered a similar viewpoint, claiming that a firm's brand image or corporate reputation contributes to the development of a good attitude toward the company and the medications it produces, which in turn influences the prescribing physician. The only option for pharmaceutical businesses to withstand the competition for prescribers is to develop a competitive edge (Parmata and Chetla, 2020). When considering the likelihood that doctors will recommend a certain product, the reputation of the pharmaceutical business that made it is another critical consideration (Ion, 2013). Pharmaceutical marketing, in accordance with Narendran (2013), has an impact on a doctor's brand preference.

According to studies, the registration of brand names is a recurring issue, and medicine names are frequently challenging to spell, pronounce, and recall (Castillo and Hopkins, 2003). Customer loyalty is influenced by both the business image and expectations being disappointed to a large but indirect extent (Barnard, 2000). As a result, a company's or product's brand image serves as an important mediator between the identified variables, which are necessary or act as triggers for the prescription behavior and the doctor's prescription habit or behavior. This idea also calls for the interdependence of the following.

## **2.2 Empirical Review**

### **2.2.1 The Effect of Direct Marketing on Prescription Behavior of Physician**

Spending time with salespeople is anticipated to be beneficial for physicians since the knowledge they get ultimately results in greater patient recovery rates, which reflect favorably on the qualifications and experience of the doctors. In a similar vein, a different study (Wang and Adelman, 2009; Zipkin and Steinman, 2005) shown that interactions between medical representatives affect how advertised pharmaceuticals are prescribed.

The study of Blair et al., (2009) which published in the Journal of Medical Marketing found that while direct marketing had some influence on prescription behavior, it was not a major factor. The study found that physicians were more influenced by their own clinical experience, patient needs and preferences, and clinical guidelines than by direct marketing materials.

Mintzes et al. (2013) a study was done on how direct marketing affected doctors' prescribing habits in the US. The study revealed direct marketing can lead to increased prescribing of the promoted drug, even when the drug is not the most appropriate treatment option.

Direct marketing can also influence physicians' knowledge and perception of drugs. A study by Othman et al. (2013) found that direct-to-physician marketing can increase physician awareness of the promoted drug's brand, but can also overestimate the effectiveness of the drug and underestimate its risks. This highlights the importance of ensuring that direct marketing campaigns provide balanced and accurate information to physicians.

According to Persson et al. (2015), direct marketing targeted at physicians and other healthcare providers can affect prescribing habits. The study conducted included a diverse sample of physicians in Sweden, and the results showed that exposure to direct marketing of particular medications positively influenced prescription behavior. The physicians disclosed that they were more interested in prescribing the marketed drugs, especially if they had received a substantial reimbursement from the pharmaceutical companies.

Another study by Mintzes et al. (2015) examined how they are related direct marketing and prescribed conduct in the context of prescribing of psychotropic drugs in primary care. The study found that physicians who were exposed to direct marketing were more likely to prescribe the promoted drug, even if it was not the best option for the patient. The study concluded that direct marketing tactics may have significant adverse effects on the quality of care provided to patients.

The study result of Hailu et. Al., (2021) shows that except promotional material consistent follow-up with sales representatives, brand recognition and price medicine have positive and substantial impact on the prescribing behavior. The findings' outcomes of Betselot (2021) showed that direct Marketing had a favorable and considerable impact on prescription behavior of physician. In light of this idea, the suggested hypothesis was:

***H<sub>1</sub>: Direct Marketing has significant effect on physician prescription behavior.***

### **2.2.2 The Effect of Sales Promotion on Prescription Behavior of Physician**

Study by Shweta and Anil (2018) found that physicians who were exposed to sales promotions, such as free samples or gifts, were more likely to prescribe the promoted drugs

than those who were not exposed. Another study by Heikkila et al. (2015) found that sales promotions had a significant effect on the prescribing decisions of physicians, particularly when it came to new or unfamiliar drugs. Similarly, a study by Khot and colleagues (2017) also reported that sales promotion tools like gifts and incentives have an important bearing on a doctor's prescribing behavior.

Shakoor et al., (2019) examined 15 studies that evaluated the impact of sales promotion on the prescription behavior of physicians. They found that the use of sales promotion tactics by pharmaceutical companies had a significant impact on the prescription behavior of physicians. Specifically, sales promotions such as gifts, samples, and sponsored conferences were found to increase the prescription behavior of the physicians, leading to increased prescription rates of the promoted product. The authors also noted that the impact of sales promotion appeared to be stronger for newer drugs and for physicians who had less experience or who had more frequent interactions with pharmaceutical representatives.

Johnson et al., (2020) performed (e.g., free samples, gifts, meals, and conferences) and the prescription behavior of physicians across a variety of therapeutic areas. The authors found indicated the impact of sales promotion was very favorable on the likelihood of physicians prescribing the promoted drugs compared to non-promoted drugs, but the effect size was modest and varied depending on the type and intensity of the promotion, the setting and characteristics of the physicians, and the regulatory environment.

According to Kabir and Maul an (2021), prescribing behavior was significantly and favorably influenced by sales promotions that included low- and high-value presents as well as free medical drug equipment. Ahmed et al. (2020) also found that sales promotions had a favorable and notable influence on the choice to prescribe. It has been discovered that the pharmaceutical industry's promotional efforts play a crucial part of determining the prescribing habit. The findings' conclusions of Betselot (2021) showed that sales promotion had significant and favorable effects effect on prescription behavior of physician.

The finding of Mulugeta and Achenif (2017) shows that sales promotion has an influence on the prescribing behavior and it has most influencing factor.

In a related descriptive qualitative study by Adam (2016) on the influence of drug promotion tools on doctors working in Addis Ababa's private hospitals who prescribe new brands of medicine, it was discovered that 47.4% of doctors said that free medical samples have the effect of reminding them of the brand and influencing their prescription choice. In light of this idea, the suggested hypothesis was:

*H<sub>2</sub>: Sales promotion has significant effect on physician prescription behavior.*

### **2.2.3 The Effect of Public Relation on Prescription Behavior of Physician**

The study of Smith et al., (2016) found that there is a significant influence of public relations on physician prescribing practices. The meta-analysis of 46 studies showed that a positive correlation between physician exposure to pharmaceutical company promotion and an increase in prescribing. The analysis also revealed that gifts received from pharmaceutical firms had a greater influence on proposing than educational events. The study concludes that public relations play a role in influencing physician behavior and the need for greater transparency in communication between physicians and pharmaceutical companies.

The study conducted by Castro et al. (2018) aimed to investigate the associations encompassing public relations, trust, and prescription behavior in the Colombian pharmaceutical industry. The results showed that public relations had a considerable enhancement of trust and prescription behavior, while trust had an enormously favorable effect on prescription behavior. The study also found that public relations had a direct effect on prescription behavior, bypassing the mediating effect of trust. Based on these findings, the authors suggested that enhancing public relations initiatives and building trust could lead to increased prescription behavior in the pharmaceutical industry.

The study by Greene et al. (2018) explored the impact of public relations on physician prescribing behavior through a systematic review of the literature. The results indicated that public relations activities significantly influenced physician prescribing behavior. The activities of public relations can result in increased physician awareness and knowledge about specific products, as well as positive attitudes towards them. The findings also suggest that utilizing public relations strategies can influence physician prescribing behavior and result in a higher prescription of promoted products.

An empirical investigation by Yadullahi, et al. (2019) found that pharmaceutical public relations significantly influenced physicians' prescribing behavior, as physicians who received more information and exposure to pharmaceutical companies were more likely to prescribe their products. Furthermore, the study found that physicians who had positive perceptions of pharmaceutical public relations efforts were more likely to be influenced by them in their prescribing decisions. Overall, the study suggests that pharmaceutical public relations plays a significant role in shaping physicians' prescribing behaviors, and highlights the need for increased transparency and regulation in the industry.

The conclusions of the research of Betselot (2021) found that doctors' prescribing behavior was significantly and relatively most positively impacted by public relations. The finding of Mulugeta and Achenif (2017) shows that public relation has an influence on the prescribing behavior and is perceived as the least important factor. Based on this notion, the proposed hypothesis was:

*H<sub>3</sub>: Public relation has significant effect on physician prescription behavior.*

#### **2.2.4 The Effect of Personal Selling on Prescription Behavior of Physician**

The investigation's findings showed that personal selling had a significant positive effect on the knowledge of the physicians about the product, their attitude towards the product, and their intention to prescribe the product. In addition, the study found that the relationship quality between the medical professional and the salesperson had a significant moderating impact on the link between personal selling and prescribed conduct.

One such review was published by Kantor and Simic (2016) analyzed 27 studies from 1998 to 2014 that investigated the relationship between personal selling and prescription behavior of physicians. The review found that personal selling had a significant but moderate effect on prescription behavior of physicians. Specifically, physicians who had more interactions with sales representatives were more likely to prescribe the promoted products. However, the review also found that the impact of personal selling on prescription habits was dependent on several factors, including the quality of information provided by sales representatives, the level of trust between physicians and sales representatives, and the physicians' existing prescribing habits.

Rafii and Azar (2016) conducted research into the effects of personal selling on physician prescription behavior: an empirical analysis" provides empirical evidence on the effect of personal selling on the prescribing behavior of physicians. They found that personal selling activities significantly influenced the prescription habits of doctors. Specifically, physicians who received more intense and frequent personal selling activities tended to prescribe more of the promoted drugs. The authors attribute this effect to the persuasive power of personal selling, which can influence the beliefs and attitudes of physicians toward a particular drug and increase their confidence in its effectiveness.

According to a study by Keshavjee et al. (2017) found that personal selling had a positive effect on physician prescribing behavior, especially when the sales representative was knowledgeable about the product and established a good relationship with the physician. The study also found that the frequency of visits by sales representatives had a significant effect relating to doctors' prescription habits. Furthermore, the research showed that the type of drug being promoted also played a role in the effectiveness of personal selling.

The study conducted by Neumann et al. (2019). The study aimed to ascertain the effects of personal selling on prescription behavior of physicians in Germany. The results showed that exposure to pharmaceutical representatives significantly influenced the way doctors wrote prescriptions. Specifically, the study found that physicians who had more contact with pharmaceutical representatives were more likely to prescribe branded drugs rather than generic drugs. Furthermore, the study found that the impact of personal selling on prescription behavior varied depending on the type of drug and the clinical area. For instance, personal selling had a stronger influence on medication use in the area of cardiovascular diseases compared to other clinical areas.

The findings' outcomes of Betselot (2021) showed that personal selling had a favorable and substantial impact on prescription behavior of physician. The finding of Mulugeta and Achenif (2017) indicates that personal selling has an influence on the prescribing behavior and it has the second most important factor. The study of Kabir et al., (2021) discovered that doctors' prescription behavior is most significantly influenced by personal selling.

***H<sub>4</sub>: Personal selling has significant effect on physician prescription behavior.***

## **2.2.5 The Effect of Advertising on Prescription Behavior of Physician**

The investigation published in the article of General Internal Medicine in 2015 discovered that exposure to pharmaceutical advertising was connected to a rise in likelihood of prescribing the advertised drug. The study analyzed data from over 2,000 physicians across multiple specialties and found that each increase in the frequency of exposure to drug advertising was associated with a 7-9% increase in the likelihood of prescribing the advertised drug (Kravitz et al., 2015). Additionally, gifts and interactions between the doctor and corporate representatives are important factors that influence doctors' decisions to prescribe medications. A systematic review published in PLoS One in 2016 analyzed 58 studies on the effects of pharmaceutical advertising on physician prescribing behavior. The review obtained strong a record of exposure to drug advertising was connected to a rise prescribing of advertised drugs, as well as a decreased likelihood of prescribing generic drugs. The review also found evidence that physicians who saw more drug ads were less likely to consider the risks and benefits of the drugs they prescribed (Frosch et al., 2016).

A study carried out in 2017 by Yao et al. analyzed the pharmaceutical industry's impact marketing on the prescription-writing habits of doctors. The study found that exposure to drug advertisements by pharmaceutical companies significantly influenced medical professionals' prescription habits. The more frequently physicians were exposed to advertisements; the more likely they were to prescribe the advertised drugs (Yao et al., 2017).

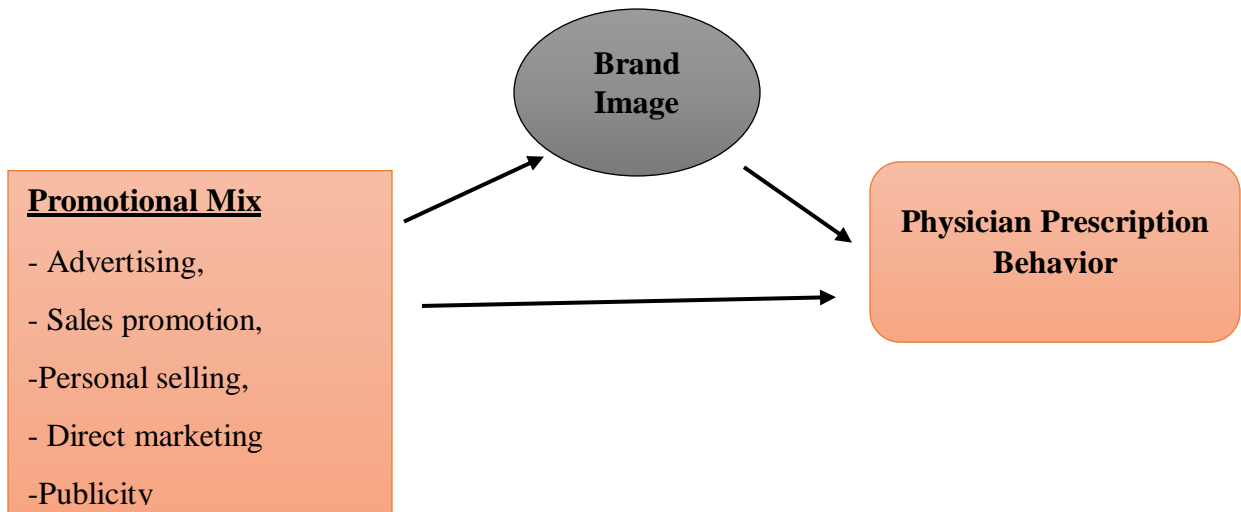
Datta and Dave (2017) stated that pharmaceutical company advertisements to physicians directly affect drug decisions and prescriptions written for a certain drug. Therefore, it would appear that doctors do not frequently employ alternate knowledge sources like medical journals and formularies. Information is instead primarily gleaned from advertising materials, business medical representatives (MRs), and sponsored workshops. Finding of Mulugeta and Achenif (2017) shows that advertising has an influence on the prescribing behavior and it has the second most important factor. The research result of Hailu et. Al., (2021) shows that except promotional material Continual follow-up with sales representatives, a company's reputation and price medicine have positive and substantial impact on the prescribing behavior. The study of Kabir et al., (2021) bare that advertising is the least important promotional medium for doctors' prescription behavior while personal selling is the most important. The next two

most important promotional tools are sales promotion and public relations. It is discovered that direct marketing is significant. In light of this idea, the suggested hypothesis was:

*H<sub>5</sub>: Advertising has significant effect on physician prescription behavior*

### 2.3 Conceptual Framework of the Study

According to both the theoretical and empirical review indicated that the linkage between promotional tools and physician prescription behavior as well as the mediating role of brand image in the interrelationship between them. Consequently, the theoretical framework of the research is provided in following figure.



*Figure 1: Conceptual framework of the study*

**Source: Developed Based on Al-Haddad et al. (2014) and Faisal et al., (2020)**

# **CHAPTER THREE**

## **RESEARCH METHODOLOGY**

This section bases on the procedures of the study that employed. It was compassed of the study approach, research design, sampling technique, sampling design, sampling procedure, sample size, target population of the study, data collection methods and instruments, reliability and validity test of the instrument and ethical considerations.

### **3.1. Research Design**

This research will look into the effects of promotional mix on physician prescription behavior mediated by the brand image in the instance of government hospitals. Accordingly, an explanatory research design was appropriate. Because, explanatory research helps to identify the relationship and effect of multiple factors, and predict an outcome from one or more predictors (Creswell, 2009). Also, the study was employing a descriptive research design.

### **3.2. Research Approach**

The researcher was applying a quantitative approach as the researcher intends to gather objective and quantifiable data utilizing questionnaires that was filled out by physicians and applying statistical tools to test the relationship among the variables. Development and application of mathematical ideas, models, and hypotheses relating to natural events are the goals of quantitative research. According to Creswell (2009), mathematical models are used in quantitative research to test hypotheses and use numerical data to identify the relationship, and effects of variables.

### **3.3. Sampling Design**

#### **3.3.1. Target Population of the Study**

Based on the minimum bed capacity and service provision the study was target Tertiary level health care which is the highest in terms of bed capacity and service provision coverage so-considered a specialty hospital that typically provides care to 3.5 to 5 million patients and serves as a referral center to general hospitals (secondary health care system).

There are 13 hospitals in Addis Ababa City, however, this study was only focus on 3 hospital. As a result, the study target population includes all physicians who are actively prescribing at the time of the study, working in 3 specialized hospitals which is 448.

**Table 1: Target Population**

No.	Hospital Name	Number of physicians
1.	Amanuel Mental Specialized Hospital	40
2.	St. Paul's Hospital Millennium Medical College	162
3.	Alert Comprehensive Specialized Hospital	246
<b>Total</b>		<b>448</b>

*Source: HR Personnel Information of the Three Hospitals*

### 3.4. Sampling Technique

Convenience sampling technique was applied to determine sampled respondents from the sampling frame. The researcher was using this sampling technique because of the absence of access to a list of the target population being researched. According to Battaglia (2008), in the convenience sampling technique elements of the samples have been selected from the population based on their accessibility to the researcher.

#### 3.4.1. Sample Size

In this regard, Saunders et al. (2003) justified that sample size ensures an appropriate representation of the defined target population. Based on Kothari (2004), the formula to determine the sample size (n) of finite population is given as;

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + z^2 \cdot p \cdot q}$$

*Source: Kothari (2004)*

**Where:** **N** =Total number of physicians in selected Specialized hospitals

**n** =sample size

**Z**= Standardized normal at to 95% confidence interval equal to 1.96

**p**=sample proportion P=0.5

**q**=1-p

**e** =Allowable error (0.05)

Therefore as determined by the sample size computation, it is depicted below..

$$n = \frac{(1.96)^2 (0.5) (0.5) 448}{(0.05)^2 (448-1) + (1.96)^2 (0.5) (0.5)}$$
$$n = 430.2592/2.0779 \quad \mathbf{n} = 207.0644 \approx 207$$

Consequently, using the formula in this study requires a sample size of 207 respondents was taken from 3 Specialized Hospitals.

### **3.4.2. Sampling Procedure**

The sampling design that was applied for the research is two-level sampling. Due to resource constraints, the researcher was not covering all the physicians working in the 13 hospitals in Addis Ababa City. Hence, researcher randomly selects 3 Specialized hospitals found at Tertiary tier located in Addis Ababa city.

To select the sampled respondents (physicians) from the selected specialized hospitals, a convenience sampling technique was applied. Finally, the researcher was distributing the required sample size for each of 3 specialized hospitals proportional to the number of physicians as indicated the table-2 above.

*Table 2: Proportional Sample Size distribution*

No.	Hospital Name	Number of physicians	%age from the total population	Sampled physicians
1.	Amanuel Mental Specialized Hospital	40	8.9%	18
2.	St. Paul's Hospital Millennium Medical College	162	36.2%	75
3.	Alert Comprehensive Specialized Hospital	246	54.9%	114
<b>Total</b>		<b>448</b>	<b>100%</b>	<b>207</b>

*Source: Researcher Computation*

### **3.5. Data Sources**

We utilized both primary and secondary sources of information. According to Kothari (2004), primary data are fresh data that are collected for the first time and thus happened being unique in nature. The primary data was employed as the researcher is interested to collect original data from a population. In this study, quantifiable information from the doctors in the chosen specialized hospitals was considered as a major source of information. Besides, as a secondary data source unpublished and published research works of other researchers was used to elaborate this research finding.

### **3.6. Research Instrument**

A structured questionnaire was employed to collect the information needed in this research. Because data can usually be completed at a time that is suitable for the respondents, it is frequently inexpensive and simple to distribute among many responses. The survey was designed based on the conceptual framework of the study. As a result, the researcher was given a set of questionnaires to the selected sampled respondents in order to collect the essential information.

### **3.7. Method and Procedure of Data Collection**

A questionnaire was the main data tool for quantitative data gathering regarding promotional mix tools, brand image and physician prescription behavior based on respondent's perception.

The questionnaire method was applied because it is fast and easier to get data from a significant number of respondents. In light of this, Saunders et al., (2009) noted that a questionnaire is a means of gaining information from the respondents and enables to collection of data from a large population. The questionnaire comprised a close-ended question format. Given this, the four-part questionnaire was created with the goals of the study in mind.

The first section of the questionnaires shows the respondent's information in connection with age, gender, specialty, years of service. Also, the second part focuses on the promotional mix techniques for pharmaceutical companies. The third part consists of the brand image of prescription drugs. The last part subject to the physician prescription behavior attributes.

The responses to the questions were measured on a five Likert rating scale where: Strongly Agree (SA) = 5; Agree (A) = 4; Neutral (N) = 3, Disagree (D) = 2; and Strongly Disagree (SD) =1. The use of the Likert scale measurement is to make issues easier for respondents to answer a question simply.

The questionnaire was distributed to the physicians after the researcher has gained approval from the selected hospitals and a letter of support from the Marketing Management, School of Commerce, Addis Ababa University. The questionnaires were distributed to the respondents, and a sufficient amount of time was set up for them to complete the survey and return it within the time frame.

The researcher starts the data analysis process to transform the raw data into a pertinent, accurate, and insightful report. Also, the results of the questionnaire were coded and statistically analyzed using SPSS software package. Finally, various empirical evidences were used for triangulation to support the primary data results.

### **3.8. Data Analysis Methods**

The descriptive statistics such as frequencies, means, and standard deviations was used. Multiple linear regression analysis was performed to identify the predictors of the physician prescription behavior. All the assumption of Multiple Linear Regression Like Linear relationship, Multivariate normality, No or little multicollinearity, No auto-correlation and Homoscedasticity was tested and performed. In the regression model, independent variables with a probability value( $P < 0.05$ ) have been entered and only statistically significant variables

( $P < 0.05$ ) were included into the final model and interpreted. All the descriptive and inferential statistics are analyzed using SPSS.

### 3.9. Validity and Reliability

Validity is the extent to which findings from data analysis accurately reflect the phenomenon being studied. It only denotes the fact that a test or instrument is effectively measuring what it is intended to (Kothari, 2004). The assessment of the literature and the adaptation of the instruments employed in earlier research projects were used to address the validity issue. Besides, my adviser examined the suitability of the questions and the measurement scales and evaluated the content validity.

Being reliable is defined as the quality of regularity of a study or measurement. (Kothari, 2004). The internal consistency reliability was according to Cronbach's alpha. Zikmund et al. (2010) claim that scales with coefficient alpha larger than 0.7 indicate fair reliability and higher are sufficient to assess dependability.

**Table 3: Reliability Test Results**

Measurement	No. of Items	Cronbach's alpha
Advertising	4	0.701
Sales Promotion	4	0.716
Direct Marketing	4	0.735
Personal Selling	5	0.706
Publicity	4	0.789
Brand Image	5	0.708
Prescription Behavior of Physician	6	0.918
Reliability of All Items	32	0.828

### 3.10. Ethical Considerations

Participants only voluntarily participated in the survey. Participants verbally consented after being fully informed of the study's purpose. Every participant in the study was treated with dignity, respect, and independence. Furthermore, to ensure that the respondents were at ease and that their comments were truthful and uninfluenced by any outside influences, the respondents' responses were kept in strict confidence.

## CHAPTER FOUR

### RESULT AND DISCUSSION

This section presents discussion, finding and analysis of data. The data analysis and interpretations of the finding are appeared accordingly. In the first part descriptive statistics, those responders' demographic details are presented. Then finding of SPSS data was interpreted and analysis were done based on the study objectives. Finally, discussion of the result was presented.

#### 4.1. Characteristics of respondents

The table-4 shows percentage of male respondents is elevated compared to the percentage of female respondents. The proportion of responses in the age range of 30-45 is significantly higher than the percentage of respondents in any other age range. Those general practitioners are significantly higher than the percentage of respondents in any other job category. The percentage of respondents who have been practicing for greater than 5 years are substantially greater than the proportion of responses who have been practicing for less than 5 years. The percentage of respondents who work at Alert Comprehensive Specialized Hospital is substantially greater than the proportion of respondents who work at any other hospital.

**Table 4: Socio-Demographic Characteristics of the participants**

Profiles of the Population		Frequency	Percent
Sex of the respondents	Male	125	60.4
	Female	82	39.6
Age categories of the respondents	Below 30	58	28.0
	30-45	122	58.9
	46-60	24	11.6
	Above 60	3	1.4
Job categories of the respondent	Specialist	46	22.2
	Consultant	4	1.9
	General practitioner	118	57.0
	Resident	39	18.8
Years of practice	Less than 5 years	61	29.5
	5-10years	95	45.9

	More than 10 years	51	24.6
Working place	St, Paul's Hospital Millennium Medical College	75	36.2
	Amanuel Mental Specialized Hospital	18	8.7
	Alert Comprehensive Specialized Hospital	114	55.1

Source: Survey data

## 4.2. Description of Study Variables

### 4.2.1. Advertising

**Table 5: Physician Attitudes Toward Advertising**

Advertising	N	Mean	Std. Deviation
Firms promote drugs through scientific journals encourage physician to prescribe drug	207	4.40	.556
Advertising on catch cover of free samples help physicians prescribe the drug	207	4.42	.559
Words on the packaging of gift items encourage physicians to prescribe the drug	207	4.48	.547
The constant information from awarded scientific journals and scientific publication	207	4.39	.588
<b>Average of Advertising</b>	<b>207</b>	<b>4.42</b>	<b>0.56</b>

Source: Survey data

The table shows that the most popular type of advertisement that influences physicians are promotion of drugs through scientific journals (mean = 4.40). This is followed by advertising on the catch cover of free samples (mean = 4.42), words on the packaging of gift items (mean = 4.48), and constant information from awarded scientific journals and scientific publications (mean = 4.39). The average of all forms of advertising is 4.42.

The results of the study suggest that physicians are influenced by a variety of forms of advertising when prescribing drugs. However, the most popular type of advertisement that influences physicians, promotion of drugs through scientific journals. This suggests that

pharmaceutical companies are most successful at influencing physicians when they promote their drugs through scientific journals and scientific publication.

Overall, the outcome of survey suggest that pharmaceutical companies are most successful at influencing physicians when they promote their drugs through scientific journals and scientific publication. scientific channels

#### 4.2.2. Sales Promotion

**Table 6: Direct marketing perceptions of the respondents**

<b>Sales Promotion</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Low-cost gifts (pen, paper weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers remind drug brand while prescribing.	207	4.38	.486
Financial incentives, given that there are similar competitive medicines motivate physicians to prescribe.	207	4.43	.543
The company’s interest to educate the physicians on new medicine through financing their participation to international scientific conference.	207	4.40	.529
Add value incentives therefore office practice items, patient record forms, etc. given that there are competitive alternative medicines.	207	4.41	.549
<b>Average Sales Promotion score</b>	<b>207</b>	<b>4.40</b>	<b>0.53</b>

**Source: Survey data**

The table shows that the most common form of sales promotion that influences physicians is low-cost gifts (pen, weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers (mean = 4.38). This is followed by financial incentives (mean = 4.43), the company’s interest to educate the physicians on new medicine through financing their participation to international scientific conference (mean = 4.40), and add value incentives therefore office practice items, patient record forms, etc. given that there are competitive alternative medicines (mean = 4.41). The average of all forms of sales promotion is 4.40.

Overall, findings from the research suggest that pharmaceutical companies nearly all successful at influencing physicians when they provide them with free gifts.

### 4.2.3. Personal Selling

**Table 7: Respondents Perceptions on Personal Selling**

<b>Personal Selling</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Sales representatives provide accurate and up to date detailing regarding drug brand.	207	4.28	.511
The detailers' scientific knowledge on the medicine encourages physician's prescription decision.	207	4.29	.542
Frequency of sales representative's visit has an influence on prescription choice.	207	4.32	.517
Sales representatives demonstrate free drug sample to persuade physician to prescribe medicine.	207	4.29	.531
The physician – detailer interpersonal relationships motivate the physician to prescribe the medicine.	207	4.29	.522
<b>Average Personal Selling Score</b>	<b>207</b>	<b>4.29</b>	<b>.525</b>

**Source: Survey data**

The table shows that the most common form of personal selling that influences physicians is sales representatives providing accurate and up to date detailing regarding drug brand (mean = 4.28). This is followed by the detailers' scientific knowledge on the medicine encourages physician's prescription decision (mean = 4.29), frequency of sales representative's visit has an influence on prescription choice (mean = 4.32), sales representatives demonstrate free drug sample to persuade physician to prescribe medicine (mean = 4.29), and the physician – detailer interpersonal relationships motivate the physician to prescribe the medicine (mean = 4.29). The average of all forms of personal selling is 4.29.

Overall, findings from the research suggests pharmaceutical companies were successful at influencing physicians when the services of sales representatives them with precise and current information about their drugs.

#### 4.2.4. Direct Marketing

**Table 8: Respondents Perception on Direct Marketing**

<b>Direct Marketing</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The brand advertisements direct to physician's post, telephone or email encourages prescription of a specific brand.	207	4.10	.619
Physicians prefer to e-detailing than sales representative detailing to prescribe medicine.	207	4.07	.638
Detailing from peer groups is helpful ion physician drug prescription choice.	207	4.09	.640
The physicians' online real time support with information provided by the firm.	207	4.07	.619
<b>Average Direct Marketing Score</b>	<b>207</b>	<b>4.08</b>	<b>.629</b>

**Source: Survey data**

The table shows that the most common form of direct marketing that influences physicians is brand advertisements direct to physician's post, telephone or email (mean = 4.10). This is followed by physicians prefer to e-detailing than sales representative detailing to prescribe medicine (mean = 4.07), detailing from peer groups is helpful ion physician drug prescription choice (mean = 4.09), and the physicians' online real time support with information provided by the firm (mean = 4.07). The average of all forms of direct marketing is 4.08. Overall, findings from the research suggests pharmaceutical companies' majority of successful at influencing physicians when they send them direct mail advertisements

#### 4.2.5. Public Relations/ Publicity

**Table 9: Public Relations as perceived by respondents**

<b>Public Relations/ Publicity</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Supplier's product launch meeting, lunch or dinner encourages physician prescribing drug brand.	207	4.48	.520
Suppliers arranging clinical or scientific meetings on several special days.	207	4.42	.551
Suppliers conducting a discussion by a specialist doctor are helpful to remind drug brands to prescribe.	207	4.45	.563
Suppliers sponsor physician for conferences to influence them to prescribe their brands more.	207	4.42	.550
<b>Average Public Relations/ Publicity Score</b>	<b>207</b>	<b>4.44</b>	<b>.546</b>

**Source: Survey data**

The table shows that the most common form of public relations/publicity that influences physicians is suppliers' product launch meeting, lunch or dinner encourages physician prescribing drug brand (mean = 4.48). This is followed by suppliers arranging clinical or scientific meetings on several special days (mean = 4.42), suppliers conducting a discussion by a specialist doctor are helpful to remind drug brands to prescribe (mean = 4.45), and suppliers sponsor physician for conferences to influence them to prescribe their brands more (mean = 4.42). The average of all forms of public relations/publicity is 4.44.

Overall, the findings of the study indicate that pharmaceutical companies were successful at influencing physicians when they hold events that allow them to meet with physicians and discuss their products in person.

#### 4.2.6. Brand Image

**Table 10: Respondents perceptions on Brand Image**

<b>Brand Image</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Pharmaceutical supply “x” brand could be easily recognition.	207	4.29	.507
Pharmaceutical supplier “x” has a differentiated image from other suppliers.	207	4.30	.480
My familiarity with country of origin of a drug brand affects the way I look at pharmaceutical supplier “x”	207	4.31	.532
I trust pharmaceutical supplier “x” brand.	207	4.32	.489
I admire the other physicians who prescribe drug brand of drug supplier “x”.	207	4.35	.517
Average Brand Image Score	207	4.31	.505

**Source: Survey data**

The table shows that the pharmaceutical supplier "X" brand is easily recognizable, with a mean rating of 4.29. This suggests that physicians are familiar with the brand and its products. The pharmaceutical supplier "X" also has a distinct reputation among suppliers, with a mean rating of 4.30. This suggests that physicians see the brand as unique and different from other brands. The familiarity of physicians with the medicine brand's country of origin also distresses their perception of brand image, with a mean rating of 4.31. This suggests that physicians may be more likely to trust a brand that is made in a country that they trust.

Physicians also trust the pharmaceutical supplier "X" brand, with a mean rating of 4.32. This suggests that physicians believe that the brand is reliable and trustworthy.

Finally, physicians admire other medical professionals that write prescriptions the drug brand of pharmaceutical supplier "X", with a mean rating of 4.35. This suggests that physicians are influenced by the opinions of their peers

#### 4.2.7. Physician prescription behavior

**Table 11: prescribing habits of physicians**

<b>Physician Prescription Behavior</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Initial perception (clinical observation) of the medicine matters most to me	207	4.27	.619
Detailing of the sales representatives has a role on my prescription behavior	207	4.28	.630
Sales promotion doesn't encourage me to prescribe a medicine.	207	4.27	.671
Advertisement of brands on scientific journals inspires my prescription behavior.	207	4.27	.662
Financial sponsorship for training, conferences, and gatherings persuades me to prescribe a medicine.	207	4.28	.653
Peer groups (colleagues, specialists, trainers...) influence my prescription behavior considerably	207	4.29	.663
Average Physician Prescription Behavior	207	4.28	.650

**Source: Survey data**

The mean score for all six questions is 4.28, which is slightly above the midpoint of the scale. This suggests that physicians are generally influenced by a variety of factors when making prescribing decisions. The highest-rated factor is initial perception (clinical observation) of the medicine, with a mean score of 4.27. This suggests that physicians are most likely to prescribe a medicine if they believe it will be effective in treating the patient's condition. The second-highest-rated factor is detailing by sales representatives, with a mean score of 4.28. This suggests that physicians are somewhat influenced by the information provided by sales representatives, but they are not solely reliant on this information when making prescribing decisions. The third-highest-rated factor is sales promotion, and as well as cash support for training, seminars, and events with a mean score of 4.27. The fifth-highest-rated factor is, with

a mean score of 4.28. The sixth-highest-rated factor is peer groups (colleagues, specialists, trainers), with a mean score of 4.29. This suggests that physicians are most likely to prescribe a medicine if their peers are also prescribing it.

Overall, the data suggests that physicians are influenced by a variety of factors when making prescribing decisions. The most important factors are initial perception (clinical observation) of the medicine and peer groups.

### **4.3. Inferential Statistics**

Inferential statistics uses sample measurements of the subject and make generalization about the larger population (Zikmund, 2010). It comprises different assumption of data test for their suitability or fitness to the intended regression model. The assumptions tests are data normality, multicollinearity, linearity and homoscedasticity test. Finally, the multi-regression analysis in terms of model summary, ANOVA test and determination of beta coefficients were conducted to address the objectives of this study.

#### **4.4.2. Assumption Test for Linear Regression Model**

Prior to running the regression, all parametric tests in statistical analysis assumptions about the data checked and hold on to these assumptions for precise interpretation and model integrity (Shieh, 2010). According to Sapp (2006) multiple regressions have four assumptions that is linearity, normality of the distribution, multicollinearity of variables; homoscedasticity (constant variance) of the errors is applied in the case of cross-sectional data.

##### ***Multicollinearity***

Multicollinearity is a situation in which two or more predictor variables are highly correlated. According to Filed (2009), the test indicates that there is a multicollinearity issue within the independent variables when Variance Inflation Factor(VIF) value of independent variables greater than the threshold level ( $VIF \leq 10$ ).I.e., when independent variables are highly related, there is “overlap” or sharing of predictive power. Thus, the impact of multicollinearity is to reduce any individual independent variable’s predictive power by the extent to which it is associated with the other independent variables. “Tolerance” and “variance inflation factors” (VIF) values for each predictor is a means of checking for Multicollinearity.

Tolerance value below 0.1 and VIF value above 10 percent indicate a multicollinearity problem (Robert, 2006).

In this model the tolerance value for all of the independent variables is greater than 0.10; therefore, multicollinearity assumption has not violated. This is also supported by the VIF values which are well below the cut-off point of 10. These results are not surprising, given that the Pearson’s correlation coefficients between these independent variables were less than 0.7.

**Table 12: Multicollinearity Test**

Model	Coefficients <sup>a</sup>	
	Collinearity Statistics	
	Tolerance	VIF
Advertisement	0.979	1.021
Sales Promotion	0.973	1.028
Direct Marketing	0.89	1.124
Personal Selling	0.891	1.123
Publicity	0.928	1.077
Brand Image	0.905	1.105
a Dependent Variable: Physician Prescription Behavior		

***Homoscedasticity***

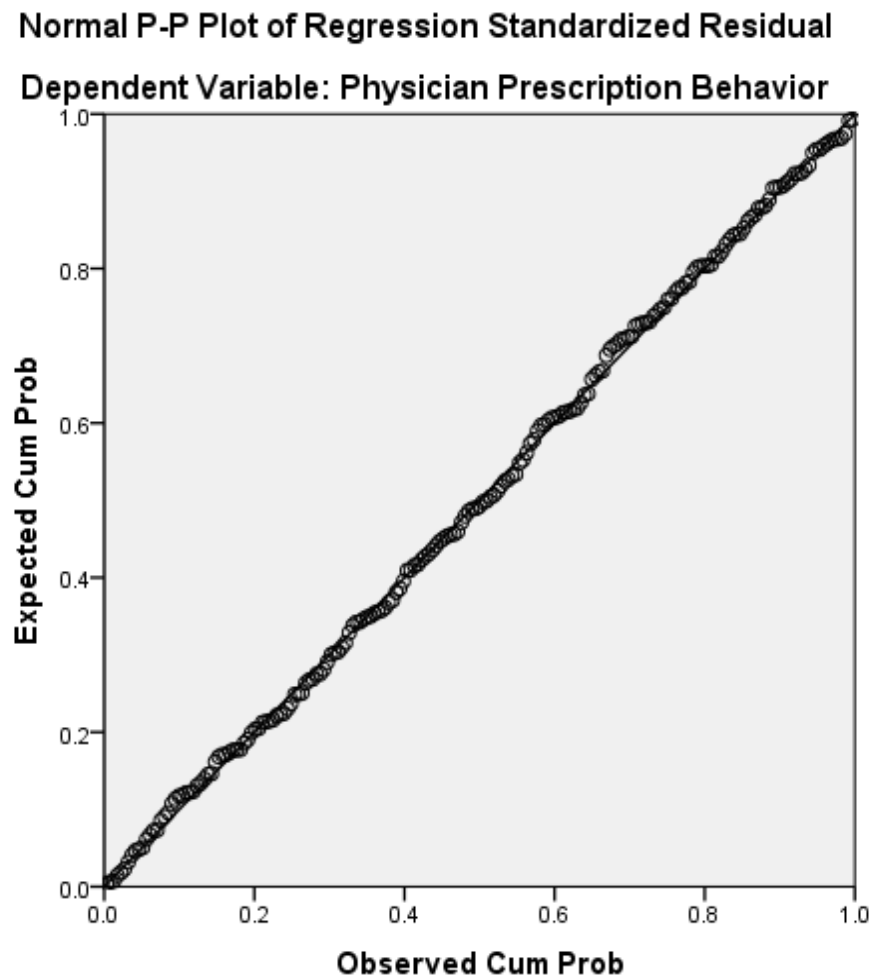
The assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables (Osborne & Waters, 2002). This means that researchers assume that errors are spread out consistently between the variables (Keith, 2006). Homoscedasticity can be checked by visual examination of a plot of the standardized residuals (on Y-axis) by the regression standardized predicted value (on X-axis) (Osborne & Waters, 2002). If there is no violation of assumptions, standardized residuals should scatter randomly around a horizontal line of zero. Ideally, residuals are randomly scattered around zero (the horizontal line) providing even distribution. In addition, the inspection of the plots is observed a good variability in the plots and hence, the variables fulfilled the homoscedasticity assumption as well.



### *Linearity Test*

Linearity defines the dependent variable as a linear function of the predictor (independent) variables. Multiple regressions can accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2002). Residual plots showed that there were no the residuals departure from linearity and would expect to see a random scatter points about the horizontal line. Hence, by using visual inspection of the scatter plot, it demonstrated about the linear relationships of dependent variable with each of the independent variables in this study. Hence, the variables met the linearity assumption.

.....



*Figure 2: Normal P-P Plot*

**Multivariate Normality Test**

Normality test examines whether the data is normally distributed in normal distribution curve or not. There are two ways of testing the normality, by graphical method and statistical method. A common rule to thumb test for normality is to run descriptive statistics to get skewness and kurtosis, then use the criteria that kurtosis should be within the mean +2 to -2 range when the data are normally distributed (Garson, 2012). As it can be seen in Table 14 all the absolute values of skewness and the kurtosis are between -2 and +2. Hence, it confirmed that data witness to normality assumptions.

**Table 13: Multivariate Normality test**

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Physician Prescription Behavior	207	-.333	.169	-.478	.337
Advertisement	207	-.388	.169	-.249	.337
Sales Promotion	207	-.085	.169	-.726	.337
Direct Marketing	207	-.130	.169	-.139	.337
Personal Selling	207	.126	.169	-.444	.337
Publicity	207	-.130	.169	-1.091	.337
Brand Image	207	.384	.169	-.628	.337

**4.4.3. Predictors of Physician Prescription Behavior**

To investigate the connection and effect, multiple regression analysis was used promotional mix as independent variables, Brand Image simultaneously Physician Prescription Behavior. The regression model used to predict Physician Prescription Behavior is:

$$\text{Physician Prescription Behavior (PPB)} = B_0 + \text{Advertisement (ADV)} + \text{Sales Promotion (SP)} + \text{Direct Marketing (DM)} + \text{Personal Selling (PS)} + \text{Publicity Utility (PU)} + \text{Brand Image (BI)}$$

**Table 14: Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.704 <sup>a</sup>	.496	.480	.39462
a. Predictors: (Constant), Brand Image, Direct Marketing, Advertisement, Sales Promotion, Publicity, Personal Selling				

The model shows that the Physician Prescription Behavior (PPB) variables variation is explained by 49.6% of strategies for reaching target audience variables captured in this study, while the rest of variation is accounted for by additional factors beyond the model.

Coefficients							
Mode	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	-3.910	.702		-5.569	.000	-5.294	-2.526
Advertisement (ADV)	.385	.068	.287	5.661	.000	.251	.519
Sales Promotion (SP)	.247	.072	.175	3.430	.000	.105	.389
Direct Marketing (DM)	.519	.062	.446	8.369	.000	.397	.641
Personal Selling (PS)	.294	.082	.191	3.589	.000	.132	.456
Publicity Utility (PU)	.078	.067	.061	1.167	.245	-.054	.210
Brand Image (BI)	.387	.084	.243	4.595	.000	.221	.553
a. Dependent Variable: Physician Prescription Behavior (PPB)							

From the coefficient's regression model:

- **Constant:** The constant term is -3.910. This means that, everything else is kept the same, predicted value of physician prescription behavior is -3.910.
- **Advertisement:** The coefficient for the advertisement variable is .385. This means that, as each one-unit increase in advertisement, predicted value of physician prescription behavior increases by .385.

- **Sales Promotion:** The coefficient for the sales promotion variable is .247. This means that, for each one-unit increase in sales promotion, predicted value of physician prescription behavior increases by .247.
- **Direct Marketing:** The coefficient for the direct marketing variable is .519. This means that, for each one-unit increase in direct marketing, predicted value of physician prescription behavior increases by .519.
- **Personal Selling:** The coefficient for the personal selling variable is .294. This means that, for each one-unit increase in personal selling, predicted value of physician prescription behavior increases by .294.
- **Brand Image:** The coefficient for the brand image variable is .387. This means that, for each one-unit increase in brand image, predicted value of physician prescription behavior increases by .387.

The coefficients for the advertisement, direct marketing, sales promotion, personal sales and brand image variables are all statistically significant (p-value <0.05). This means that these variables have a significant impact on physician prescription behavior.

The coefficient for the publicity variable is not statistically significant. This suggests publicity does not have a significant effect on physician prescription behavior. The study was different from the finding of this may due to the different health facility infrastructure.

Overall, the regression model suggests that advertisement, direct marketing, sales promotion, personal selling and brand image are the most important factors that influence physician prescription behavior. Marketers can improve effectiveness of their marketing campaigns by targeting these channels and messages.

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.328 <sup>a</sup>	.108	.099	.51962
a. Predictors: (Constant), Brand Image, Promotional Mix				

**R Square** is the coefficient of determination. In this case, R Square = .108, which means that 10.8% of the variance in physician prescription behavior is described by brand image and promotional mix

<b>Coefficients</b>								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.039	.653		1.591	.113	-.248	2.326
	Promotional Mix	.336	.094	.238	3.574	.000	.151	.522
	Brand Image	.407	.106	.255	3.834	.000	.198	.617
a. Dependent Variable: Physician Prescription Behavior								

The coefficient for promotional mix is 0.336, which means that for each one-unit increase in promotion mix, the expected value of physician prescription behavior increases by 0.336.

Brand image is a measure of how favorably physicians view a pharmaceutical company's brand. The coefficient for brand image is 0.407, which means that for every one-unit increase in brand image, the expected value of physician prescription behavior increases by 0.407.

Overall, the results of this analysis suggest that both promotional mix and brand image have a significant positive effect on physician prescription behavior. This means that pharmaceutical companies can increase the likelihood that physicians will prescribe their products by increasing their promotional spending and improving their brand image.

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.626 <sup>a</sup>	.392	.389	.26833
a. Predictors: (Constant), Promotional Mix				

R Square is the coefficient of determination. In this case, R Square = .392, which means that 39.2% of the variance in brand image is described by promotional mix.

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.394	.168		14.229	.000	2.062	2.726
	Promotional Mix	.101	.009	.626	11.488	.000	.084	.119

a. Dependent Variable: Brand Image

The coefficient for promotional mix is 0.101, which means that in each one-unit increase in promotional mix, expected value of brand image increases by 0.101.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.228 <sup>a</sup>	.052	.047	.53433

a. Predictors: (Constant), Brand Image

The R-squared value of .052 indicates that brand image explains 5.2% of the variation in physician prescription behavior.

Coefficients <sup>a</sup>							
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	2.706	.470		5.764	.000	1.781	3.632
Brand Image	.364	.108	.228	3.354	.001	.150	.578

a. Dependent Variable: Physician Prescription Behavior

The coefficient for brand image is 0.364, which means that each additional unit of brand image, physician prescription behavior is anticipated to rise by 0.364, holding all other variables constant.

#### **4.4.4. Discussions**

Advertising had an insignificant effect on the physician prescription behavior. According to Eyosias (2016), the effect of media advertising on prescription pharmaceuticals has deteriorated as a result of regulatory authorities' ban on drug advertising. His findings revealed that physicians in countries that restricted drug advertisements had less been less influence in contrast to those who work in developed country.

Additionally, it was determined that sales promotion had large and favorable effects on the prescription behavior of physicians. Monetary incentives Some of the determining elements that influence a doctor's prescription behavior include sponsorship, ongoing medical education, and free samples. Even if they are unethical and illegal under some countries' legal systems, doctors always appreciate gifts of high value. Salespeople are constantly seeking out the unmet needs of a physician If they are able to locate it and resolve it with the appropriate item, it will be the ideal gift for them and may much aid in the prescription. The event's sponsoring is a great method to join the elite group of medical professionals. Making good decisions is therefore regarded as being somewhat effective relations with physicians and this also reflects in the prescription.

Medical practitioners' prescription practice was strongly and positively impacted by personal selling. The product quality is frequently preferred by a physician for his patient. That's why the quality of the product is so much important (Salman, 2019). He explained that a quality product provides sales personnel extra confidence to detail the brand in front of the physicians. Skillful detail of a product is necessary to promote a drug, especially for the newer molecule.

Brand image as a mediating factor in the interaction between the components of the advertising mix and prescription behavior. According to Eyosias (2016), Ethiopia is home to more than 150 pharmaceutical firms that represent 2,000 brands or more.

Over all the finding of the study has an elevated data for men and which were related to occupied of the position majorly by men. Due to this most pharmaceutical company prefers women to hire as a sales representative's person so as to promote their product. Based on these physicians should be aware of their prescribing habit not to bias to their patients. Prescribing brand is not allowed because of their affordability, potential drug resistance, and accessibility

of the drug. The pharmaceutical company should consider the legal frame of the country regarding to brand image of drug.

## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. Conclusions

The study found that, in Ethiopia, pharmaceutical companies can influence physician prescription behavior through a variety of promotional strategies, including sales promotions, sales personnel activities, and direct marketing. These strategies can be used to build brand image and awareness, provide physicians with accurate and up-to-date information about products, and create relationships with physicians. The study also found that brand image plays a mediating role in the relationship between promotional mix and physician prescription behavior. This means that the effectiveness of promotional strategies is influenced by the brand image of the product. For example, a product with a strong brand image is more likely to be prescribed by physicians, even if it is more expensive than a similar product with a weak brand image (Kalkidan Alebachew 2019).

The study findings have implications for both pharmaceutical companies and physicians. Pharmaceutical companies can use the findings to develop more effective promotional strategies. Physicians can use the findings to be more aware of the ways in which their prescribing behavior is impacted by promotional strategies.

- Results of the study suggest that pharmaceutical companies should focus on building strong brand images for their products. This can be done through a variety of marketing activities, including sales promotions, sales personnel activities, and direct marketing.
- The study's findings also suggest that pharmaceutical companies should make sure that their sales representatives are well-trained and knowledgeable about their products. This will help them to build relationships with physicians and provide them with accurate and up-to-date information about products.
- The study's findings also suggest that physicians should be aware of the ways in which their prescribing behavior is influenced by promotional strategies. They should be critical of the information that they receive from pharmaceutical

companies and make sure that they are prescribing the best medication for their patients.

## **5.2. Recommendations**

The researcher recommend that pharmaceutical companies focus on using the following promotional mix strategies to influence physician prescription behavior:

- Sales promotions: Pharmaceutical companies can offer physicians free samples of their products, discounts on their products, and other incentives to encourage them to prescribe their products.
- Sales personnel activities: Pharmaceutical companies can train their sales representatives to provide accurate and up-to-date information about their products to physicians. Sales representatives can also build relationships with physicians by providing them with support and answering their questions.
- Direct marketing: Pharmaceutical companies can send direct mail to physicians with information about their products. They can also use email and social media to reach out to physicians.

In addition to the promotional mix strategies mentioned above, pharmaceutical companies can also influence physician prescription behavior by:

- Providing accurate and up-to-date information about their products: Physicians are more likely to prescribe products that they know and trust. Pharmaceutical companies should make sure that their sales representatives are well-trained and knowledgeable about their products. They should also provide physicians with access to accurate and up-to-date information about their products through their websites and other channels.
- Building relationships with physicians: Physicians are more likely to prescribe products from companies that they have a good relationship with. Pharmaceutical companies should make an effort to build relationships with physicians by providing them with support, answering their questions, and listening to their feedback.

- Avoiding unethical practices: Pharmaceutical companies should avoid unethical practices such as providing physicians with gifts or incentives in exchange for prescribing their products. These practices can damage the reputation of the company and make it more difficult to influence physician prescription behavior in the long run.

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## APPENDIX



**Dear respondents,**

My name is Yonas. This survey is developed with an objective to conduct research on the *effects of promotional mix on physician prescription behavior mediated by the brand image in the case of government hospitals*. It helps to complete Master of Art in Marketing Management at Addis Ababa University, School of Commerce.

I kindly ask you some questions regarding the issues of promotional mix, physician prescription behavior and brand image. Dear respondent, you are selected to give information for the given questions below. All the responses you provide are firmly confidential and exclusively used for this research purpose.

For further inquiry use the following contact information

Yonas Ayele

0921-16-16-40

**Thank in advance for your valuable time and cooperation!**

## Part I. Respondent's Demographic Questions

1. Gender: Male  Female
2. Age: Below 30  31-45  46-60  Above 60
3. Job categories \_\_\_ Specialist  Consultant  General Practitioner
4. Years of practice:  Less than 5 years  5 - 10 years  More than 10 years
5. Working Place: St. Paul's Hospital Millennium Medical College   
 Amanuel Mental Specialized Hospital   
 Alert Comprehensive Specialized Hospital

## Part II. Questions related to Promotional Mix

Please give your response in terms of level of agreement or disagreement in five levels Likert scale as shown below.

1= Strongly disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly agree

No.	Advertisement	5	4	3	2	1
1.	Firms promote drugs through scientific journals encourage physician to prescribe drug					
2.	Advertising on catch cover of free samples help physicians prescribe the drug					
3.	Words on the packaging of gift items encourage physicians to prescribe the drug					
4.	The constant information from awarded scientific journals and scientific publication helps physicians to prescribe the drug.					
	<b>Sales Promotion</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
5.	Low-cost gifts (pen, paper weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers remind drug brand while prescribing.					
6.	Financial incentives, given that there are similar competitive medicines motivate physicians to prescribe.					
7.	The company's interest to educate the physicians on new medicine through financing their participation to international scientific conference.					
8.	Add value incentives therefore office practice items, patient record forms, etc. given that there are competitive alternative medicines.					

		5	4	3	2	1
	<b>Direct Marketing</b>					
9.	The brand advertisements direct to physician's post, telephone or email encourages prescription of a specific brand.					
10.	Physicians prefer to e-detailing than sales representative detailing to prescribe medicine.					
11.	Detailing from peer groups is helpful ion physician drug prescription choice.					
12.	The physicians' online real time support with information provided by the firm.					
	<b>Personal Selling</b>					
13.	Sales representatives provide accurate and up to date detailing regarding drug brand.					
14.	The detailers' scientific knowledge on the medicine encourages physician's prescription decision.					
15.	Frequency of sales representative's visit has an influence on prescription choice.					
16.	Sales representatives demonstrate free drug sample to persuade physician to prescribe medicine.					
17.	The physician – detailer interpersonal relationships motivate the physician to prescribe the medicine.					
	<b>Publicity</b>					
18.	Supplier's product launch meeting, lunch or dinner encourages physician prescribing drug brand.					
19.	Suppliers arranging clinical or scientific meetings on several special days.					
20.	Suppliers conducting a discussion by a specialist doctor are helpful to remind drug brands to prescribe.					
21.	Suppliers sponsor physician for conferences to influence them to prescribe their brands more.					

### Part III. Questions related to Brand Image

Please give your response in terms of level of agreement or disagreement in five levels Likert scale as shown below.

1= Strongly disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly agree

No.	Brand Image	5	4	3	2	1
1.	Pharmaceutical supply “x” brand could be easily recognition.					
2.	Pharmaceutical supplier “x” has a differentiated image from other suppliers.					
3.	My familiarity with country of origin of a drug brand affects the way I look at pharmaceutical supplier “x”					
4.	I trust pharmaceutical supplier “x” brand.					
5.	I admire the other physicians who prescribe drug brand of drug supplier “x”.					

### Part IV. Questions related to Physician Prescription Behavior

Please give your response in terms of level of agreement or disagreement in five levels Likert scale as shown below.

1= Strongly disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly agree

No.	Physician Prescription Behavior	5	4	3	2	1
1.	Initial perception (clinical observation) of the medicine matters most to me					
2.	Detailing of the sales representatives has a role on my prescription behavior					
3.	Sales promotion doesn't encourage me to prescribe a medicine.					

4.	Advertisement of brands on scientific journals inspires my prescription behavior.					
5.	Financial sponsorship for training, conferences, and gatherings persuades me to prescribe a medicine.					
6.	Peer groups (colleagues, specialists, trainers...) influence my prescription behavior considerably					